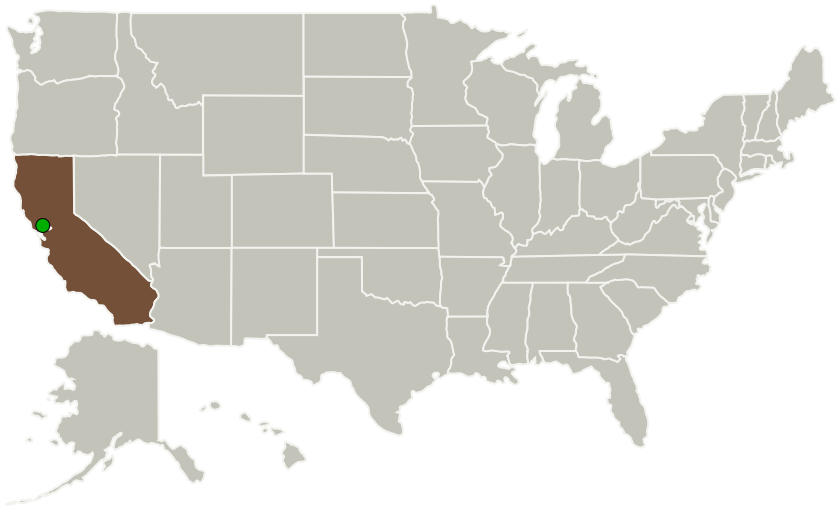
CubeSat Power Management Controller and Solar Array Articulation System, Phase I

Completed Technology Project (2011 - 2011)

Project Introduction

The CubeSat platform represents a valuable architecture from which to develop satellite capabilities, payloads and technologies. However, CubeSat spacecraft must be able to support a variety of payload options and mission profiles while providing high reliability. A highly efficient CubeSat Electrical Power System (EPS) is critical to enabling these mission and payload requirements. When compared against existing products, an Innoflight CubeSat Power Management Controller (CPMC) with associated CubeSat Solar Array Articulation System (CSAAS) provides game changing performance, flexibility, and reliability. The proposed CubeSat CPMC / CSAAS solution provides 20 watts of on-orbit average power, accommodates various battery chemistries, supports ultra-capacitor technologies for high peak power payload, and is provided in a fully redundant configuration. At the conclusion of Phase 1, Innoflight will demonstrate the operation of a prototype CPMC / CSAAS system for a representative CubeSat mission, bringing the system to a TRL of 5. During Phase 2, Innoflight will complete functional and environmental qualification, bringing the system to a TRL of 8. Following the completion of Phase 2, two sets of CPMC / CSAAS flight hardware will be fabricated and tested, and the system will be ready for flight demonstration on a CubeSat platform.

Primary U.S. Work Locations and Key Partners



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Organizations Performing Work	Role	Type	Location
Innoflight, Inc.	Lead Organization	Industry Veteran-Owned Small Business (VOSB)	San Diego, California
Ames Research Center(ARC)	Supporting Organization	NASA Center	Moffett Field, California

Primary U.S. Work Locations
California

Project Transitions

February 2011: Project Start

September 2011: Closed out

Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/138071)*

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Innoflight, Inc.

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

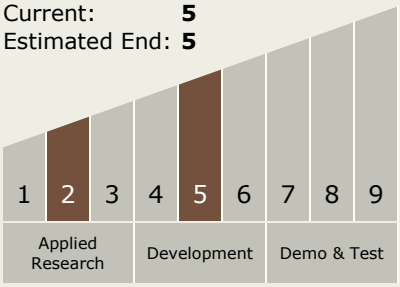
Carlos Torrez

Principal Investigator:

Jonathan Wolff

Technology Maturity (TRL)

Start: **2**
Current: **5**
Estimated End: **5**



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Technology Areas

Primary:

- TX03 Aerospace Power and Energy Storage
  - TX03.3 Power Management and Distribution
    - TX03.3.1 Management and Control

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System